

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK**

CARNEGIE INSTITUTION OF
WASHINGTON and M7D CORPORATION,

Plaintiffs,

v.

PURE GROWN DIAMONDS, INC. and
IIA TECHNOLOGIES PTE. LTD d/b/a
IIA TECHNOLOGIES,

Defendants.

Case No. 20-cv-0189 (JSR)

**DEFENDANTS' REPLY MEMORANDUM OF LAW IN SUPPORT OF
MOTION TO DISMISS PLAINTIFFS' COMPLAINT**

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TABLE OF CONTENTS

I.	THE '189 PATENT RECITES UNPATENTABLE SUBJECT MATTER.....	1
II.	THE '078 PATENT RECITES UNPATENTABLE SUBJECT MATTER.....	4
III.	PLAINTIFFS' ALLEGATIONS OF INFRINGEMENT LACK PLAUSIBILITY	7
A.	Factual Background	7
B.	The Complaint Does Not Plausibly Allege Direct Infringement.....	8
C.	The Complaint Does Not Plausibly Allege Indirect or Willful Infringement.....	9
IV.	CONCLUSION.....	10

TABLE OF AUTHORITIES

	Page(s)
Federal Cases	
<i>Alice Corp. v. CLS Bank International</i> , 573 U.S. 208, 223 (2014).....	3
<i>American Axle & Manufacturing v. Neapco Holdings LLC</i> , 939 F.3d 1355, 1359 (Fed. Cir. 2019).....	4, 5
<i>Ariosa Diagnostics, Inc. v. Sequenom, Inc.</i> , 809 F.3d 1282, 1290 (Fed. Cir. 2015).....	2
<i>Athena Diagnostics, Inc. v. Mayo Collaborative Services, LLC</i> , 915 F.3d 743, 752 (Fed. Cir. 2019).....	1, 4
<i>Automated Transaction LLC v. N.Y. Cmty. Bank</i> , No. 12–CV–3070(JS)(ARL), 2013 WL 992423, at *4 (E.D.N.Y. Mar. 13, 2013).....	8
<i>Bell Atlantic Corp. v. Twombly</i> , 550 U.S. 544, 557-59 (2007)	7
<i>Bilski v. Kappos</i> , 561 U.S. 593, 610-11 (2010)	4
<i>Bio-Technology Gen. Corp. v. Genentech, Inc.</i> , 80 F.3d 1553, 1560 (Fed. Cir. 1996).....	9
<i>Cardionet, LLC v. Infobionic, Inc.</i> , No. 2019-1149, slip op. at 20-22 (Fed. Cir. Apr. 17, 2020), ECF No. 56 (Long Decl. Ex. Y)	2, 3, 6
<i>Cleveland Clinic Foundation v. True Health Diagnostics LLC</i> , 859 F.3d 1352, 1360, 1361 (Fed. Cir. 2017).....	2
<i>Cleveland Clinic Foundation v. True Health Diagnostics LLC</i> , 760 F. App'x 1013, 1020 (Fed. Cir. 2019) (nonprecedential)	4
<i>Data Engine Technologies LLC v. Google LLC</i> , 906 F.3d 999, 1008 n.2 (Fed. Cir. 2018).....	2, 3, 6
<i>Diamond v. Diehr</i> , 450 U.S. 175, 187, 191-92 (1981)	2, 4
<i>Electric Power Group, LLC v. Alstom S.A.</i> , 830 F.3d 1350, 1356 (Fed. Cir. 2016).....	5-6
<i>Genetic Veterinary Sciences, Inc. v. LABOKLIN GmbH & Co.</i> , 933 F.3d 1302, 1316 (2019).....	1, 4
<i>Gentry v. Kaltner</i> , No. 17-CV-8654 (KMK), 2020 WL 1467358, at *6 (S.D.N.Y. Mar. 25, 2020)	8

<i>In re Smith</i> , 815 F.3d 816, 819-20 (Fed. Cir. 2016)	4
<i>In re TLI Communications LLC Patent Litigation</i> , 823 F.3d 607, 612 (Fed. Cir. 2016)	6
<i>LaserDynamics USA, LLC v. Cinram Group, Inc.</i> , No. 15 Civ. 1629(RWS), 2015 WL 6657258, at *5 (S.D.N.Y. Oct. 30, 2015)	10
<i>Mayo Collaborative Services v. Prometheus Laboratories, Inc.</i> , 566 U.S. 66, 73, 79, 90 (2012)	3, 4, 7
<i>Natural Alternatives International, Inc. v. Creative Compounds, LLC</i> , 918 F.3d 1338, 1348 (Fed. Cir. 2019)	6
<i>Pani v. Empire Blue Cross Blue Shield</i> , 152 F.3d 67, 74 (2d Cir. 1998)	9
<i>Parker v. Flook</i> , 437 U.S. 584, 590 (1978)	4
<i>Pfizer Inc. v. Aceto Corp.</i> , 853 F. Supp. 104, 105 (S.D.N.Y. 1994)	9
<i>Pollock v. Energy Corp. of Am.</i> , No. 10-1553, 2014 WL 562726, at *1 (W.D. Pa. Feb. 11, 2014)	7
<i>Rapid Litigation Management v. CellzDirect, Inc.</i> , 827 F.3d 1042, 1048, 1050 (Fed. Cir. 2016)	2
<i>Smart v. Goord</i> , 441 F. Supp. 2d 631, 637 (S.D.N.Y. 2006)	2, 6
<i>Two-Way Media Ltd. v. Comcast Cable Communications LLC</i> , 874 F.3d 1329, 1340 (Fed. Cir. 2017)	3
<i>Valinge Innovation AB v. Halstead New Eng. Corp.</i> , Civil Action No. 16-1082-LPS-CJB, 2018 WL 2411218, at *10-11 (D. Del. May 29, 2018)	9-10

Federal Statutes

35 U.S.C. § 271(a)	8
35 U.S.C. § 271(g)	8, 9

List of Exhibits

Exhibit Q at 6:10-27, 8:41-48, 11:22-37 U.S. Patent No. 6,692,714 to Vagarali et al.	3
Exhibit R at 8 Excerpt from the Prosecution History of U.S. Patent No. 6,811,610 to Frushour et al. (reissued as U.S. Patent No. RE41,189)	3

Exhibit S at 9:42-45, 7:37-40, 7:59-65 U.S. Patent No. 5,704,976 to Snail	6
Exhibit T at 2-3 Letter from Anand K. Sharma to Terrence J. Wikberg (Mar. 31, 2020)	7
Exhibit U at 1-12 Excerpts from the Prosecution History of U.S. Patent No. RE41,189 to Li et al.	8
Exhibit V at 5 State of Florida Incorporation Record for Gemesis, Inc., Doc. No. F13000002247 (2013), <i>available at</i> http://search.sunbiz.org/Inquiry/CorporationSearch/ ConvertTiffToPDF?storagePath=COR%5C2013%5C0528%5C47855281.Tif& documentNumber=F13000002247	8
Exhibit W at 4-5 State of Florida Corporate Name Change Record for Pure Grown Diamonds, Inc., Doc. No. F13000002247 (2016), <i>available at</i> http://search.sunbiz.org/Inquiry/ CorporationSearch/ConvertTiffToPDF?storagePath=COR%5C2016%5C0127 %5C81364195.Tif&documentNumber=F13000002247	8
Exhibit X at 2, 5 State of Florida Incorporation Record for The Gemesis Corporation, Doc. No. F98000004848 (1998), <i>available at</i> http://search.sunbiz.org/Inquiry/ CorporationSearch/ConvertTiffToPDF?storagePath=COR%5C1998%5C0828 %5C50625975.TIF&documentNumber=F98000004848	8

For reasons stated previously (*see* Defs. Br., ECF No. 29) and below, the Court should issue an order that cancels the asserted claims of '078 and '189 Patents¹ for reciting ineligible subject matter and dismisses Plaintiffs' Complaint for failing to plausibly allege infringement.

I. THE '189 PATENT RECITES UNPATENTABLE SUBJECT MATTER

Plaintiffs do not respond to Defendants' arguments and focus on a straw man. *See* Opp'n at 11-12, ECF No. 36. Whether nature or man makes CVD diamonds is immaterial. *See Genetic Veterinary Scis., Inc. v. LABOKLIN GmbH & Co.*, 933 F.3d 1302, 1316 (2019) (rejecting the argument that the asserted claims were directed to a patent-eligible application because they recite "a man-made laboratory procedure"); *Athena Diagnostics, Inc. v. Mayo Collaborative Servs., LLC*, 915 F.3d 743, 752 (Fed. Cir. 2019) ("[U]se of a man-made molecule in a method claim employing standard techniques . . . may still leave the claim directed to a natural law.").

Diamond—a certain arrangement of carbon atoms—changes its optical properties when subjected to the claimed temperatures and pressures. That is not an invention; it is a fact dictated by a nature. *See* '189 Patent at 2:29-32 ("[I]t has been found that treating CVD diamond at high pressure and high temperature (HPHT) causes the optical properties to change . . ."). Regardless of whether nature creates such conditions, the fact that the atoms in a diamond reorganize when subjected to the claimed conditions is a natural phenomenon, and the '189 Patent admits it. *See id.* at 2:47-50 ("Under certain conditions of temperature and pressure, . . . the sample is transformed . . ."), 2:19-34 (discussing the underlying physics). Claim 1 literally recites that phenomenon. It says that when a "single crystal CVD diamond" is exposed to "a set temperature of at least 1500° C. and a pressure of at least 4.0 GPA outside of the diamond stable phase," the result is "improve[d] . . . optical clarity." *Id.* at 4:10-14. This claim is directed to a natural

¹ Respectively, U.S. Patent No. 6,858,078, Compl. Ex. A, ECF No. 1-1 [hereinafter '078 Patent] and U.S. Patent No. RE41,189, Compl. Ex. B, ECF No. 1-2 [hereinafter '189 Patent].

phenomenon because it “amount[s] to nothing more than observing or identifying the ineligible concept itself.” *Rapid Litig. Mgmt. v. CellzDirect, Inc.*, 827 F.3d 1042, 1048 (Fed. Cir. 2016).

To be sure, a “new and improved *technique*, for producing a tangible and useful result,” may be patentable. *Id.* at 1050 (emphasis added); *see also Diamond v. Diehr*, 450 U.S. 175, 187 (1981). And “the first party with knowledge of a . . . natural phenomenon . . . should be in an excellent position to claim [such] applications.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 809 F.3d 1282, 1290 (Fed. Cir. 2015) (Lourie, J., concurring). In the 1970s, GE was thus well-positioned to patent its diamond annealing techniques and did. *See* Long Decl. Ex. A, ECF No. 30-1. But rather than improving (or even changing) GE’s decades-old technique, the ’189 Patent merely applies it to CVD-grown diamonds, using the same conditions and equipment. *See* Defs. Br. at 8. Because “the method starts and ends with [a] naturally occurring phenomen[on] with *no meaningful non-routine steps* in between,” the claims are unpatentable. *Cleveland Clinic Found. v. True Health Diagnostics LLC*, 859 F.3d 1352, 1361 (Fed. Cir. 2017) (emphasis added).

Plaintiffs suggest judgment on the pleadings is improper because Defendants cite exhibits outside the pleadings. *See* Opp’n at 13. But “the Court may take judicial notice of records and reports of administrative bodies, items in the record of the case, matters of general public record, and copies of documents attached to the complaint.” *Smart v. Goord*, 441 F. Supp. 2d 631, 637 (S.D.N.Y. 2006). For example, a court may take notice of the asserted patent, its full prosecution history, and even extrinsic prior art. *See Cardionet, LLC v. Infobionic, Inc.*, No. 2019-1149, slip op. at 20-22 (Fed. Cir. Apr. 17, 2020), ECF No. 56 (attached as Ex. Y to Suppl. Long Decl.); *Data Engine Techs. LLC v. Google LLC*, 906 F.3d 999, 1008 n.2 (Fed. Cir. 2018).

Defendants already explained why their motion can be resolved on the pleadings. Defs. Br. at 17-18. The ’189 Patent admits HPHT treatments improve the clarity of at least Type IIa natural diamonds. *See* ’189 Patent at 1:33-43. The Complaint admits “CVD diamonds are

typically Type IIa,” Compl. ¶ 80, ECF No. 1, and “have the same physical, chemical and optical qualities as diamonds mined from the earth,” *id.* ¶ 77. And the ’189 Patent admits to using techniques from the 1970s. *See* ’189 Patent at 2:53-56 (citing patents, including one from GE).

Turning to Defendants’ exhibits, Exhibits A, B, and E of ECF No. 30 appear on the front of the ’189 Patent because they were cited during prosecution, which makes them part of the prosecution history. The Court can take judicial notice of them.² *See Data Engine*, 906 F.3d at 1008 n.2. Plaintiffs suggest “Defendants have not come close” to showing the claimed process parameters were conventional, Opp’n at 14, but the images provided in Defendants’ opening brief are clear, *see* Defs. Br. at 4, 9. One image from a GE patent in the prosecution history shows the claimed parameters were known by 1977. *See* Long Decl. Ex. A at 1, ECF No. 30-1. Additional GE patents in the prosecution history disclose them, too. *See* Long Decl. Ex. B, ECF No. 30-2 ¶¶ [0033]-[0034], [0041]-[0042]; Ex. Q³ at 6:10-27, 8:41-48, 11:22-37. During prosecution, the applicant was unable to distinguish GE’s process. The only difference the applicant could identify was that GE “treat[ed] only natural diamonds” and not “CVD diamond.” Ex. R at 8 (discussing Exhibit Q). Because applying a known treatment for mined diamonds to lab-grown diamonds does nothing to “improve[] an existing technological process,” *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 223 (2014), the claims fail step two of *Alice*.

Plaintiffs’ final argument also fails. They suggest Defendants “argue that Plaintiffs’ patent claims are invalid over prior art.” Opp’n at 14. Not so. “Eligibility and novelty are separate inquiries” that often overlap. *Two-Way Media Ltd. v. Comcast Cable Commc’ns LLC*, 874 F.3d 1329, 1340 (Fed. Cir. 2017); *see also Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 556 U.S. 66, 90 (2012) (noting that eligibility and novelty “might sometimes overlap”).

² It may also take notice of Exhibits C and D of ECF No. 30. *See Cardionet*, Ex. Y at 20-22.

³ Exhibits Q through Y are attached to the Supplemental Declaration of J. Preston Long.

II. THE '078 PATENT RECITES UNPATENTABLE SUBJECT MATTER

Plaintiffs argue the claims of the '078 Patent are not directed to a law of nature because nature “does not engage in microwave plasma chemical vapor deposition.” Opp’n at 9. Nature also does not manufacture shaft assemblies for driveline systems, let alone those tuned to within about $\pm 20\%$ of a bending mode frequency. *See Am. Axle & Mfg. v. Neapco Holdings LLC*, 939 F.3d 1355, 1359 (Fed. Cir. 2019) (invalidating such a claim). “There is no legal principle that a claim to a method of manufacturing cannot be directed to a natural law, nor are there any cases saying so.” *Id.* at 1361. Nor does the law say that all patents “directed to man-made inventions” are patent-eligible.⁴ Opp’n at 8. Again, the difference between man-made and natural diamonds is immaterial. *See Genetic Veterinary Scis.*, 933 F.3d at 1316; *Athena*, 915 F.3d at 752.

Plaintiffs use an old trick: They shift focus away from ineligible content by stressing routine activity (here, MPCVD). When a patentee tries to apply ineligible content to well-known technology, the Supreme Court calls it “insignificant post solution activity.” *Diehr*, 450 U.S. at 191-192; *see also Mayo*, 556 U.S. at 79; *Bilski v. Kappos*, 561 U.S. 593, 610-611 (2010); *Parker v. Flook*, 437 U.S. 584, 590 (1978). The prohibition against patenting laws of nature “cannot be circumvented by attempting to limit the [natural law] to a particular technological environment” because that “would allow a competent draftsman to evade” it. *Diehr*, 450 U.S. at 191-192.

The MPCVD limitations of the claims recite this type of insignificant post-solution activity. The applicants for the '078 Patent did not invent diamond MPCVD; it had been known for 20 years. *See* '078 Patent at 1:30-51 (citing articles). It was also “well-known in the art” for a

⁴ Plaintiffs derive this idea from an overly simplistic characterization of the Manual for Patent Examining Procedure, which itself lacks any force of law. *See In re Smith*, 815 F.3d 816, 819-20 (Fed. Cir. 2016) (“[S]uch Guidance is not binding on this Court.”); *Cleveland Clinic Found. v. True Health Diagnostics LLC*, 760 F. App’x 1013, 1020 (Fed. Cir. 2019) (nonprecedential) (stating “we are not bound by [the USPTO’s] guidance . . . regarding patent eligibility”).

process controller to “exercise[] feedback control over a number of MPCVD parameters, including, but not limited to, the process temperature, gas mass flow, plasma parameters, and reactant flow rates.” *Id.* at 6:20-25. In other words, diamond MPCVD was conventional. Even the claimed conditions were known. *See id.* at 1:30-51; Defs. Br. at 12.

Plaintiffs argue “[t]here is no natural law that all temperature gradients across a synthetically grown diamond will or should have temperature gradients less than 20° C.” Opp’n at 10-11. There is also no natural law that drive shaft liners must be tuned to within about $\pm 20\%$ of a bending mode frequency. *See Am. Axle*, 939 F.3d at 1359. There is, however, a natural relationship between temperature gradients on a diamond growth surface and crystal quality. The patent states, “Precise control over growth surface temperatures and growth surface temperature gradients prevents the formation of polycrystalline diamond or twins such that a large single crystal diamond can be grown.” ’078 Patent at 6:51-54. Plaintiffs even base their infringement theory on this. *See Long Decl. Ex. G* at 9, ECF No. 30-7 (“Defendants’ stones are of a quality and structure which evidence relatively uniform temperature control on their respective growth surfaces . . .”). Plaintiffs cannot invoke this law, then argue Defendants failed to prove it exists.⁵

Because the asserted claims insert an arbitrary value (20° C.) to quantify this natural relationship, then attach insignificant post-solution activity (MPCVD growth under known conditions), they are directed to unpatentable subject matter. Moreover, the claims use result-oriented, functional language—“controlling temperature . . . such that all temperature gradients across the growth surface are less than 20° C.” ’078 Patent at 14:65-67, 15:32-34. “[T]he essentially result-focused, functional character of claim language has been a frequent feature of claims held ineligible under § 101.” *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1356

⁵ Notably, Plaintiffs do not actually dispute the existence of such a natural law, only the sufficiency of Defendants’ proof and whether the claims recite it. *See Opp’n* at 11.

(Fed. Cir. 2016); *see also In re TLI Commc 'ns LLC Patent Litig.*, 823 F.3d 607, 612 (Fed. Cir. 2016) (striking claims that “fail[] to provide any technical details for the tangible components”).

Unlike *Natural Alternatives*, these claims do not recite a method of treatment or use a natural product as an ingredient. *See* 918 F.3d 1338, 1348 (Fed. Cir. 2019) (“[T]he Product Claims are directed to specific treatment formulations that incorporate natural products, but they have different characteristics and can be used in a manner that beta-alanine as it appears in nature cannot.”). Here, the claims recite a natural law for use in conventional MPCVD processing.

Again, Defendants explained why their motion can be resolved on the pleadings. *See* Defs. Br. at 17-18. The '078 Patent admits a natural relationship between smaller temperature gradients and improved crystallinity.⁶ *See* '078 Patent at 6:51-54. As discussed above, Plaintiffs acknowledge this natural relationship by relying on it in their contentions. *See* Long Decl. Ex. G at 9,⁷ ECF No. 30-7. The '078 Patent also admits diamond MPCVD was conventional. *See* '078 Patent at 1:30-51, 6:20-25 (“well-known in the art” for a process controller to “exercise[] feedback control over a number of MPCVD parameters . . .”). It even admits conditions recited in the claims were known.⁸ *See id.* at 1:30-51. And a patent cited on the face of the '078 Patent (part of the prosecution history) confirms that the claimed MPCVD conditions were known. *See* Ex. S⁹ at 9:42-45 (“maintaining the diamond seed crystal at a temperature above about 1100° C. and at no more than about one atmosphere [760 torr] of pressure”), 7:37-40 (“diamond growing surface is regulated to between about 1100° C. to about 1700° C.”), 7:59-65 (“chamber near, at or below atmospheric pressure [760 torr]”). Because these “steps in the claimed processes (apart from the natural laws themselves) involve well-understood, routine, conventional activity

⁶ The Court may also take notice of Exhibits O to H of ECF No. 30. *Cardionet*, Ex. Y at 20-22.

⁷ The contentions are of record and subject to judicial notice. *See Smart*, 441 F. Supp. 2d at 637.

⁸ The Court may also take notice of Exhibit F of ECF No. 30. *Cardionet*, Ex. Y at 20-22.

⁹ The Court may take judicial notice of Exhibit S. *Data Engine*, 906 F.3d at 1008 n.2.

previously engaged in by in the field,” they lack an inventive concept. *Mayo*, 566 U.S. at 73.

III. PLAINTIFFS’ ALLEGATIONS OF INFRINGEMENT LACK PLAUSIBILITY

Plausibility is not a formality; it plays a critical role because the complaint “define[s] the scope of discovery.” *Pollock v. Energy Corp. of Am.*, No. 10-1553, 2014 WL 562726, at *1 (W.D. Pa. Feb. 11, 2014). “[S]omething beyond the mere possibility of loss causation must be alleged, lest a plaintiff with ‘a largely groundless claim’ be allowed to ‘take up the time of a number of other people, with the right to do so representing an in terrorem increment of the settlement value.’” *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 557-58 (2007) (quoting *Dura Pharms., Inc. v. Broudo*, 544 U.S. 336, 347 (2005)). All too often “the threat of discovery expense will push cost-conscious defendants to settle even anemic cases.” *Id.* at 559. And “it is one thing to be cautious before dismissing [a patent] complaint in advance of discovery, but quite another to forget that proceeding to [patent] discovery can be expensive.” *Id.* at 558.

A. Factual Background

Plaintiffs’ “Factual” Background consists principally of allegations, not facts.¹⁰ *See* Opp’n at 1-3, ECF No. 36. Contrary to the unfounded allegations about Pure Grown Diamonds, Inc. (“PGD”) and Ila Technologies Pte. Ltd. (“2AT”), the facts are: (1) PGD is a trading company that wholesales lab-grown diamonds to retailers and has never manufactured diamonds; and (2) 2AT manufactures diamonds in Singapore, has no U.S. operations, and sells diamonds to distributors abroad, not to PGD. Plaintiffs’ were previously informed of this. *See* Ex. T at 2-3.

Plaintiffs also present unfounded and misleading allegations about the patents as fact. *See* Opp’n at 3. For example, their conclusion that the asserted patents “are well-known in the lab-grown diamond industry” lacks any basis. Opp’n at 3. And to suggest the ’189 Patent “involve[s]

¹⁰ Plaintiffs also misrepresent the source of a quotation, attributing it to “PGD’s website” when it comes from an error-laden statement on prnewswire.com from 2014. Opp’n at 1, 15.

technology developed by Plaintiff Carnegie” is questionable. *Id.* Carnegie did not even become associated with the ’189 Patent until more than four years after the original patent (U.S. Patent No. 6,811,610) issued, when Carnegie purchased it fourth-hand and used a dubious reissue process to substitute its own scientists for original inventor Robert Frushour. *See* Ex. U.

B. The Complaint Does Not Plausibly Allege Direct Infringement

Plaintiffs’ Complaint invokes the language of 35 U.S.C. § 271(a), not § 271(g). *See, e.g.*, Compl. ¶¶ 81, 87. In their Opposition, Plaintiffs tacitly acknowledge that mistake by repeatedly invoking § 271(g). *See* Opp’n at 14, 15, 18, 19, 21. The problem Plaintiffs now recognize is that the patents recite methods, which cannot be directly infringed under § 271(a) unless performed within the U.S. Any suggestion that either PGD or 2AT manufactures diamonds in the U.S. is false. Plaintiffs’ contentions¹¹ regarding PGD’s alleged manufacture hinge on Internet articles that conflate PGD with The Gemesis Corporation¹² and with 2AT. *See* Long Decl. Ex. G at 8, ECF No. 30-7. PGD does not manufacture diamonds, and 2AT manufactures them in Singapore.

Plaintiffs fail to distinguish between PGD and 2AT, referring to them as “Defendants” and attributing PGD’s sales to 2AT and 2AT’s manufacture to PGD. *See* Opp’n at 14-25. Even in parent-subsiary situations, such “group pleading” merits dismissal. *See Automated Transaction LLC v. N.Y. Cmty. Bank*, No. 12–CV–3070(JS)(ARL), 2013 WL 992423, at *4 (E.D.N.Y. Mar. 13, 2013). The ties between PGD and 2AT Plaintiffs identified in the Complaint are even more tenuous, based on association through an industry group. *See* Compl. ¶¶ 34, 40.

¹¹ Defendants did not “neglect to mention that Plaintiffs have already provided more detailed infringement contentions.” Opp’n at 18. They attached those contentions to their initial brief and discussed them. *See* Defs. Br. at 15, ECF No. 29 (discussing Long Decl. Ex. G, ECF No. 30-7).

¹² “[T]he Court may take judicial notice of certificates of incorporation” *Gentry v. Kaltner*, No. 17-CV-8654 (KMK), 2020 WL 1467358, at *6 (S.D.N.Y. Mar. 25, 2020). PGD incorporated in 2013 as Gemesis, Inc. for “[r]etail sales of laboratory grown diamonds.” Ex. V at 5. In 2015, it changed its name to Pure Grown Diamonds, Inc. Ex. W at 4-5. A separate company founded in 1998, called The Gemesis Corporation, appears to have grown diamonds. *See* Ex. X at 2, 5.

Plaintiffs argue that “[f]oreign manufacture does not avoid liability.” Opp’n at 19. While true for PGD, it is not true for 2AT. “Nothing in [§ 271(g)] suggests that a foreign manufacturer, who does not import the product into the United States, may be liable simply because it can foresee that a buyer of its product may ultimately import it into the United States.” *Pfizer Inc. v. Aceto Corp.*, 853 F. Supp. 104, 105 (S.D.N.Y. 1994); *see also Bio-Technology Gen. Corp. v. Genentech, Inc.*, 80 F.3d 1553, 1560 (Fed. Cir. 1996) (“Infringement under § 271(g) does not consist of the making of a product by a process patented in the United States; it is the importation, offer to sell, sale, or use [in the United States] of a product made by such process.”).

Plaintiffs further argue they do not need to allege an absence of “material[] change[] by subsequent processes,” 35 U.S.C. § 271(g)(1), because it is a defense, *see* Opp’n at 19. But this case differs from the authorities Plaintiffs cite because the allegations are fundamentally at odds. The ’078 Patent is about growing CVD diamonds, and the express purpose of the ’189 Patent is to materially change them. *See* ’189 Patent at 2:47-50 (“Under certain conditions of temperature and pressure, . . . the sample is transformed . . .”), 2:23-34 (describing chemical changes and the resulting changes in physical properties). Plaintiffs even allege “CVD diamonds, without additional processing, are unlikely to be Type IIa.” Compl. ¶¶ 124; *see also* Long Decl. Ex. G at 19, ECF No. 30-7 (“optical quality has been improved”). Given § 271(g)(1), infringement of the ’078 Patent is not plausible. *Cf. Pani v. Empire Blue Cross Blue Shield*, 152 F.3d 67, 74 (2d Cir. 1998) (“defense [that] appears on the face of the complaint” can be raised under Rule 12(b)(6)).

C. The Complaint Does Not Plausibly Allege Indirect or Willful Infringement

The Complaint also fails to plausibly allege knowledge of the patents, let alone specific intent for others to infringe or a reckless disregard. Although the Complaint provides notice of the patents *after* the Complaint, Plaintiffs have not plausibly alleged indirect infringement *before* the Complaint. Nor have they plausibly alleged willfulness. *See Valinge Innovation AB v.*

Halstead New Eng. Corp., Civil Action No. 16-1082-LPS-CJB, 2018 WL 2411218, at *10-11 (D. Del. May 29, 2018) (explaining that willful infringement requires pre-suit knowledge). Thus, Plaintiffs’ allegations of willfulness and pre-suit indirect infringement should be dismissed.

Plaintiffs allege only two things to show pre-suit scienter. First, they allege the asserted patents have “notoriety” in the industry. *See* Opp’n at 21. This is not a fact; it is a conclusion not entitled to a presumption of truth. Second, Plaintiffs allege Dr. Misra has seven patents about diamond manufacture, then conclude he knew (or should have known) about the asserted patents. *See id.* Plaintiffs fail to mention that (1) Plaintiffs did not contact Defendants at any point before the lawsuit; (2) the ’189 Patent and its predecessor have been cited in just 15 patent applications, nine of which were filed by original inventor Robert Frushour or Carnegie, and none of which involve Defendants or Dr. Misra; (3) the ’078 Patent has been cited in just 37 patent applications, 10 of which were filed by Carnegie or Carnegie scientists, and none of which involve Defendants or Dr. Misra; and (4) according to the USPTO’s searchable database, several hundred U.S. patents filed after these patents issued are classified as involving diamond manufacture.

Plaintiffs’ allegations thus fail to plausibly suggest pre-suit knowledge of the asserted patents, let alone specific intent for others to infringe or reckless disregard. Even if the Court were to accept Plaintiffs’ allegations, the law requires more. *See LaserDynamics USA, LLC v. Cinram Grp., Inc.*, No. 15 Civ. 1629(RWS), 2015 WL 6657258, at *5 (S.D.N.Y. Oct. 30, 2015) (“Knowledge of claims, without additional facts, does not alone prove knowledge of risk, let alone recklessness.”), *6 (“Even assuming knowledge was adequately established through the GPC correspondence or otherwise, Plaintiff has failed to adequately plead specific intent.”).

IV. CONCLUSION

Accordingly, Defendants respectfully request an order cancelling the asserted claims for reciting ineligible subject matter and dismissing Plaintiffs’ infringement allegations.

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Respectfully submitted,

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